

Turbo-V Vent Device

Model

969-9831

969-9731

User Manual

87-900-806-01 (I)

05/2012



Agilent Technologies

Notices

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Safety Notices

CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

WARNING

A **WARNING** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a **WARNING** notice until the indicated conditions are fully understood and met.

Turbo-V Vent Device



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General Information

Operators and service personnel must be aware of all hazards associated with this equipment. They must know how to recognize hazardous and potentially hazardous conditions, and know how to avoid them. The consequences of unskilled, improper, or careless operation of the equipment can be serious.

This product must only be operated and maintained by trained personnel. Every operator or service person must read and thoroughly understand operation/ maintenance manuals and any additional information provided by Agilent.

All warnings and cautions should be read carefully and strictly observed. Address any safety, operation, and/or maintenance questions to your nearest Agilent office.

The following format is used in this manual to call attention to hazards:

WARNING!



Warning are used when failure to observe instructions or precautions could result in injury or death.

CAUTION!

Warning Cautions are used when failure to observe instructions could result in damage to equipment, whether Agilent supplied or other associated equipment.

NOTE

Information to aid the operator in obtaining the best performance from the equipment.

Turbo-V Vent Device Description

The Turbo-V vent device, consisting of a vent control unit and a vent valve, is a complete unit suitable for automatic venting of the Turbo-V pump when it is switched off or during a power failure switch (refer to the following figure).

The Vent device is powered by the Turbo-V controller and a battery back-up capability is built in. The vent control unit is provided with a delay time to avoid undesired venting during a temporary power failure and to allow closure of the system valves before venting. A second setting is also provided to control the venting time to atmosphere.

The Turbo-V pump must be vented when it is shut down to prevent the forepump oil from contaminating the Turbo-V and the connected chamber.

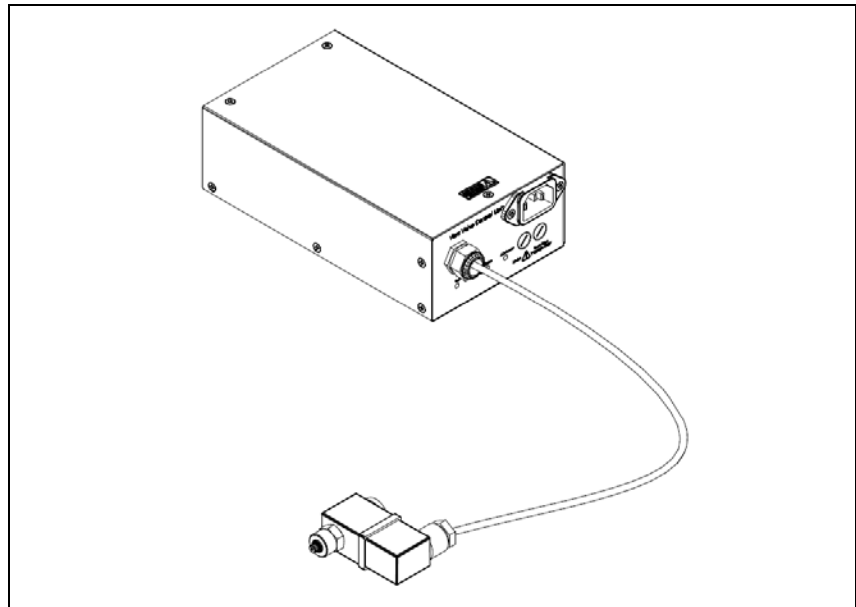


Figure 1 Vent Valve and Control Unit

The 969-9831, 969-9731 Turbo-V vent device consist of:

- a Vent Control Unit
- a Vent Valve

Disposal

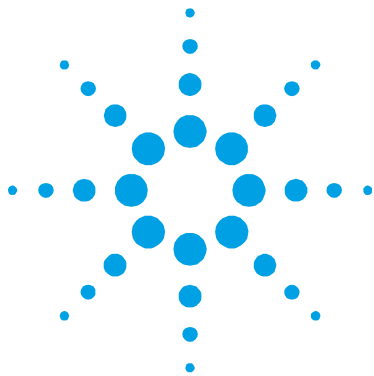
Meaning of the "WEEE" logo found in labels

The following symbol is applied in accordance with the EC WEEE (Waste Electrical and Electronic Equipment) Directive.

This symbol (**valid only in countries of the European Community**) indicates that the product it applies to must NOT be disposed of together with ordinary domestic or industrial waste but must be sent to a differentiated waste collection system.

The end user is therefore invited to contact the supplier of the device, whether the Parent Company or a retailer, to initiate the collection and disposal process after checking the contractual terms and conditions of sale.





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Technical Information

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General

The 969-9831, 969-9731 Turbo-V vent device, consisting of a vent control unit and a vent valve, are a complete unit suitable for automatic venting of the Turbo-V pump when it is switched off or during a power failure switch (refer to the following figure).

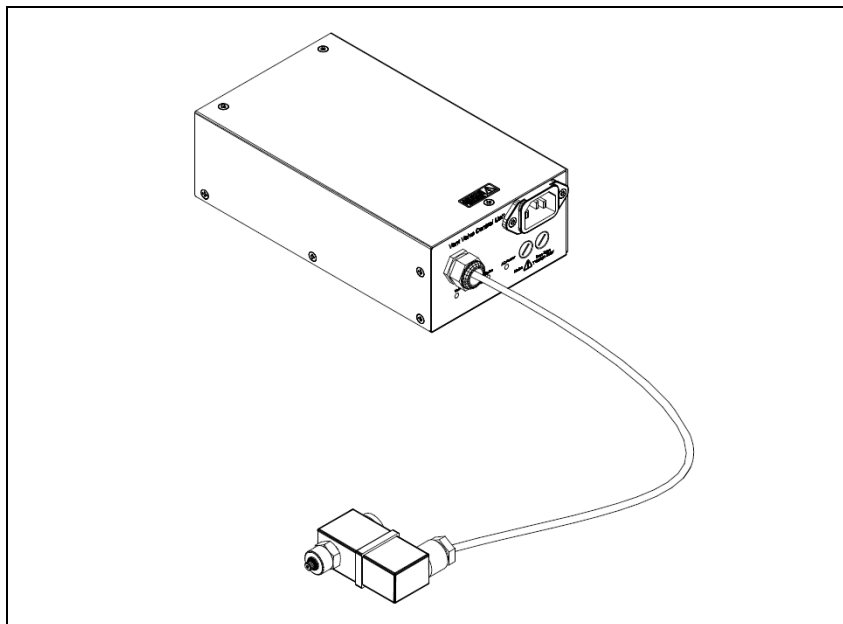


Figure 2 Vent Valve and Control Unit

The 969-9831, 969-9731 Turbo-V vent device consist of:

- a Vent Control Unit
- a Vent Valve

Vent Control Unit

The vent control unit is mains powered via the IEC 60320 C14 plug placed on its front panel and a battery back-up capability is built in.

The vent control unit is not suitable for rack mounting. Four taped holes in the bottom surface are available for fastening (see Figure 4 for details).

When the supply voltage is present, the internal battery is automatically recharged, then the timer circuits are inhibited and reset. When the supply voltage is shut off, the valve still remains not energized and the delay timer counter starts.

After the pre-set delay time, the valve opens and the venting time count starts. At the end of the venting time, the valve is de-energized and the battery is disconnected. The battery is protected against short circuits on the valve.

Two blue LEDs indicate when the mains is supplied and when the valve is driven (Valve closed).

Other three LEDs indicate the backup battery status.

The red LED indicates that the battery actual charge level does not allow the actuation of the valve. It needs to be charged before it is able to operate. In this condition, in case of power shutdown the Vent Valve opens immediately.

The green LED indicates that the battery actual charge level is ok; the yellow one indicates a charge level intermediate.

NOTE

If, even after a prolonged period of charging the green LED does not light, replace the internal battery.

Vent Valve

The vent valve consists of a small normally-closed straight through, electromagnetically-actuated and viton-sealed valve with an NW 10 KF flange on the high vacuum port and a filter or adapter tube 1/4" on the air entrance port. The valve opens under control of a metallic spring and closes when power is supplied to the valve electromagnet.

NOTE

A riffled nozzle is provided for use in lieu of the sintered filter when the Turbo-V pump is vented by the dry gas bottle (line).

Vent Device Specifications

Control Unit

Table 1

Input: voltage	110-120 Vac $\pm 10\%$ (969-9831 model) 220-240 Vac $\pm 10\%$ (969-9731 model)
frequency	50 to 60 Hz
power	15 VA
fuses	2 x T 315 mA 250V
Output: voltage	24 Vdc able to drive a Turbo Pump Vent Valve
power (max)	2.5 W
Delay time	Factory set to 16 seconds (adjustable up to 36 minutes)
Venting time	Factory set to 3 minutes (adjustable up to 36 minutes)
Operating temperature	0 to 40 °C (32 °F to 104 °F)
Storage temperature	-20 °C to + 50 °C (-4 °F to +122 °F)
Power cable	With European or NEMA plug 3 meters long (optional)
Valve cable	5 meters long
Pollution degree	2
Max altitude	2000 m a.s.l.
Compliance according to	61010-1 61326-1 (industrial level)
Weight	2.5 kg (5.5 lbs)

Vent Valve

Table 2

High vacuum flange	NW 10 KF
Gas entrance	Riffled nozzle 4.8 mm (0,19") O.D./Tube 1/4"
Orifice size	1.2 mm (0.05")
Pressure range	10^{-6} mbar to 1bar (10^{-7} Torr to atm)
Leak rate	1×10^{-7} mbar l/s
Life cycle	One million cycles
Input: voltage power	24 Vdc +10% -2% 2 W
Bakeout temperature	60 °C (140 °F)
Mounting position	Any
Weight	120 g (0.27 lbs)

Turbo-V Vent Device Outline

The outline dimensions for the Turbo-V Vent Device are shown in the following figure.

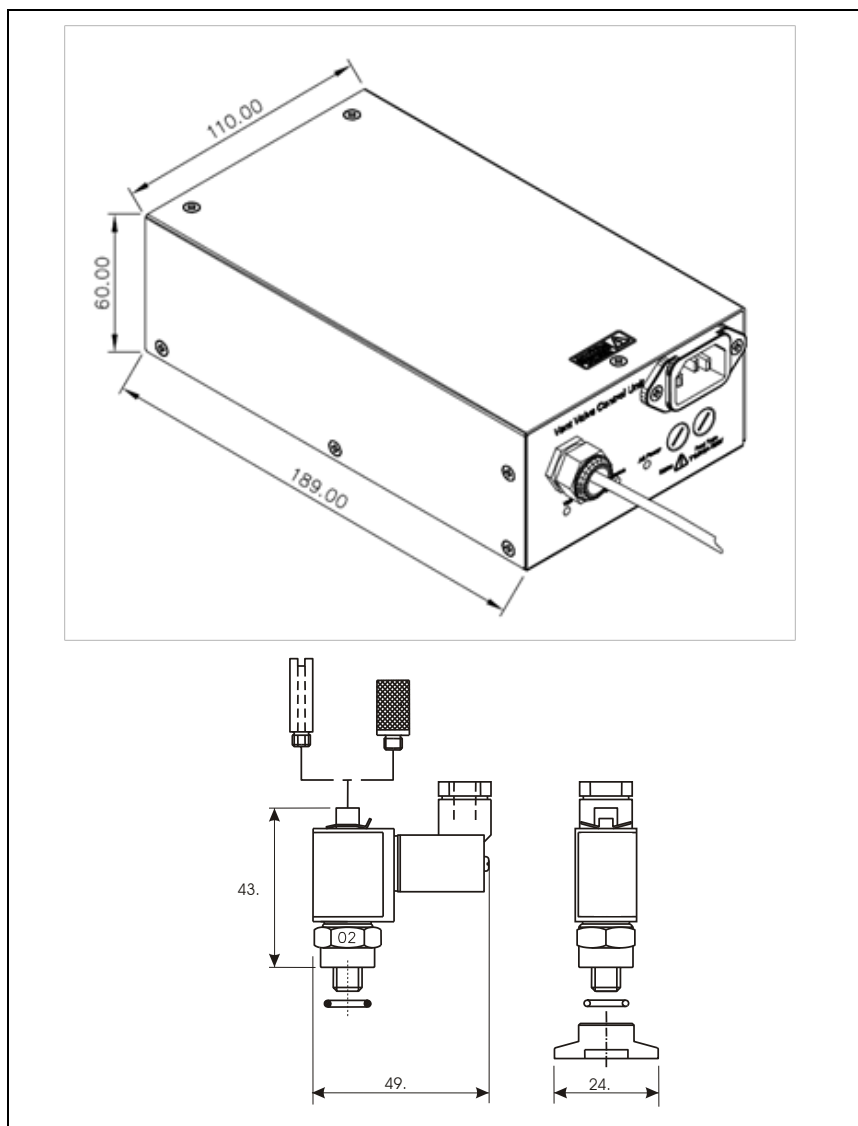


Figure 3 Turbo-V Vent Device Outline

Control Unit Installation

Place the control unit free standing on a stable surface or fasten it by means of the four suitable taped holes.

Plug the power cable into a suitable power source.

NOTE

When first installed or after 6 months of non-use, leave the control unit under voltage for at least 3 hours in order to fully recharge the battery before use.

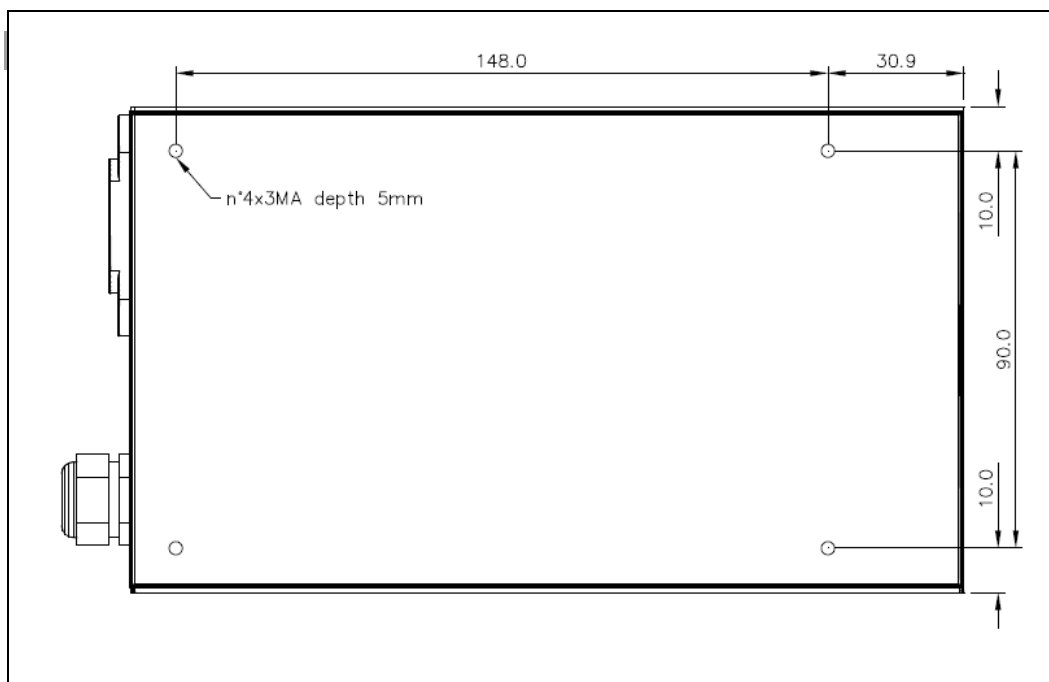


Figure 4 Fastening holes (bottom view)

Vent Valve Installation

Connect the NW 10 KF port to the chamber or pump vent port. This port is compatible with an NW 16 KF flange having an adaptive centering ring.

NOTE

Use the provided filter to prevent the ingress of dust, dirt or contaminants, when the pump is vented to atmosphere.

CAUTION!

When a dry gas bottle (line) is used, never exceed 1 bar (15 psig) to the riffled nozzle connection, otherwise a leak in the Turbo-V pump may occur.

CAUTION!

When a dry gas bottle line is used, check the correct venting time to prevent overpressuring the Turbo-V pump.

NOTE

The Turbo-V vent device has been designed to vent the Turbo-V pump only. To vent the chamber, it is advisable to install a suitable vent valve.

Operation

When the Turbo-V pump starts, the blue LED lights, indicating that the battery is being charged and the set timers are reset. If the pump is switched off or a power failure occurs, the LED goes off and the delay time starts. At the end of delay, the valve (blue) LED lights and the valve opens for the set time. At the end of the venting time the valve closes, the valve LED goes off, and the battery is switched off. If during the delay or venting time the Turbo-V pump is switched on (even if only for a few seconds) both delay and venting time are reset.

NOTE

A charged battery is able to supply a minimum of 4 complete venting cycles with the maximum delay and venting time.

CAUTION!

The life of the battery is affected by ambient temperature. Never exceed the specified operating temperature and replace the battery every 30 months.

Time Setting

WARNING!



High voltage present in the control unit can cause severe injury or death.
Service must be carried out only by qualified and authorized personnel.

WARNING!



The whole procedure described in this chapter must be carried out with the
power cord detached from the unit.

2 Technical Information

Time Setting

- 1 Disconnect the power cord from the unit.
- 2 Remove the top cover of the Vent control unit by unscrewing the screws.

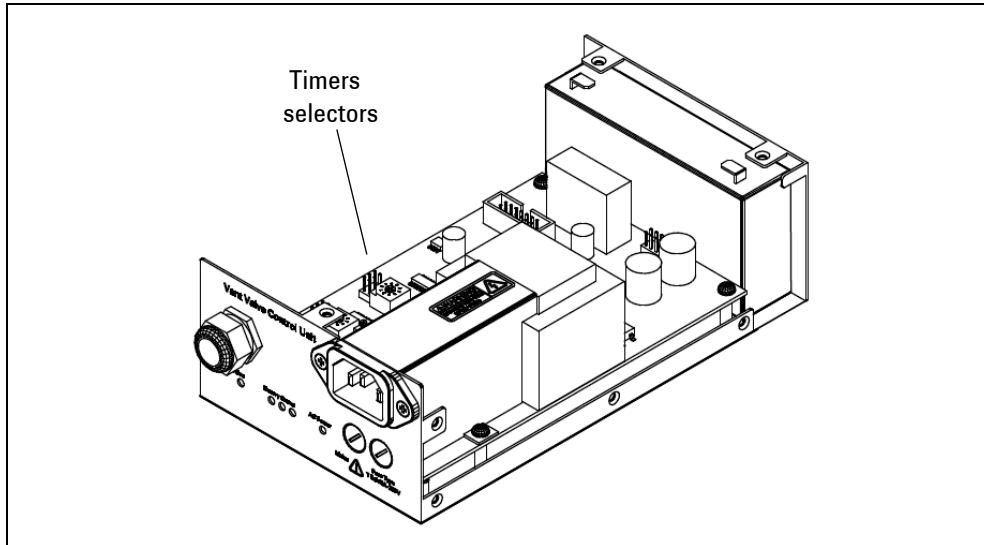


Figure 5 Unit interior

- 3 Choose the appropriate times, make the appropriate jumper settings and rotary switch position (refer to the following figure):
 - place only one jumper for each timer to select the time unit between 1s, 8s and 64s;
 - turn the rotary switch multiplier for the desired value between 0 to 9.

If the rotary switch is set to “0” the delay becomes zero (no delay) regardless of the jumper position.

Example: to set a delay time of 40 seconds and a venting time of 4 minutes proceed as follows:

- Adjust the delay time rotary switch to 5 and place the jumper across 8s.
- Adjust the venting time rotary switch to 4 and place the jumper across 64s.

CAUTION!

Use the appropriate tool to adjust the time settings to avoid damages to the rotary switches.

- 4 Replace the cover by tightening all the screws.
- 5 Reconnect the power cord to the unit.

2 Technical Information

Time Setting

The minimum venting times for each Turbo-V pump series with the high vacuum flange blanked off and leak tight, are listed below.

- Turbo-V 80 2/16 minute
- Turbo-V 300 4/16 minute
- Turbo-V 1000 0.5 minute

NOTE

The minimum venting time is the time needed to reach a pressure of about 500 mbar (375 Torr) inside the pump in order to avoid mechanical pump oil backstreaming and contamination of the Turbo-V pump.

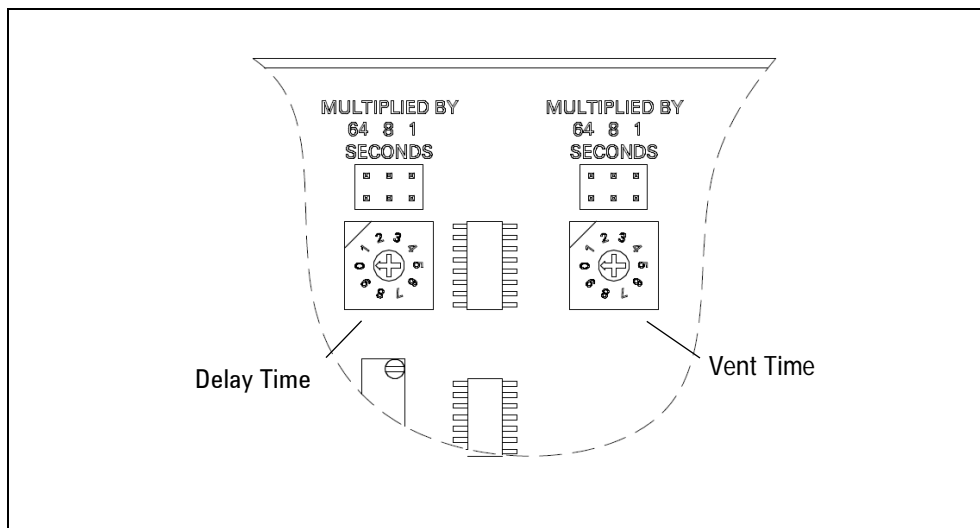


Figure 6 Timers setup selectors

Battery Replacement

WARNING!



High voltage present in the control unit can cause severe injury or death. Service must be carried out only by qualified and authorized personnel.

WARNING!



The whole procedure described in this chapter must be carried out with the power cord detached from the unit.

- 1 Disconnect the power cord from the unit. Remove the top cover of the Vent control unit by unscrewing the screws.

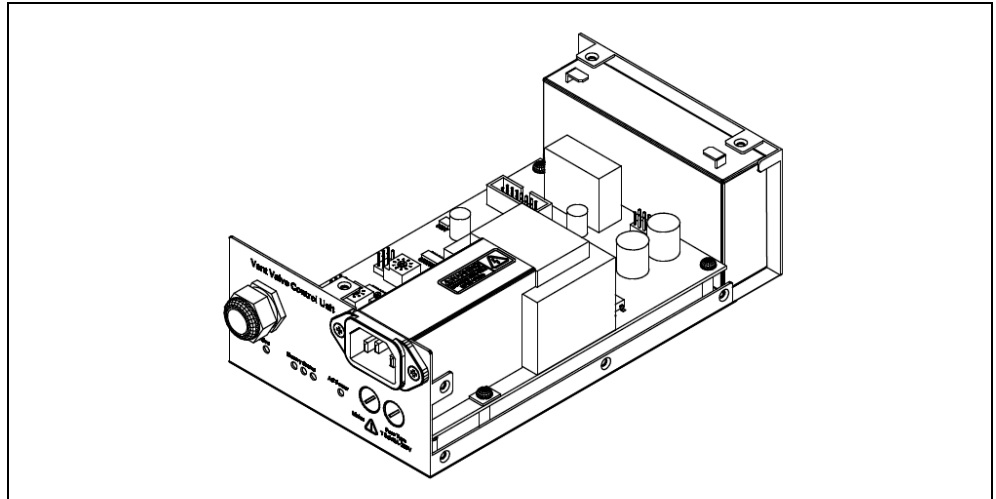


Figure 7 Unit interior

2 Technical Information

Battery Replacement

- 2 Identify the battery positioned in the rear of the unit.
- 3 Disconnect both electrical connections.

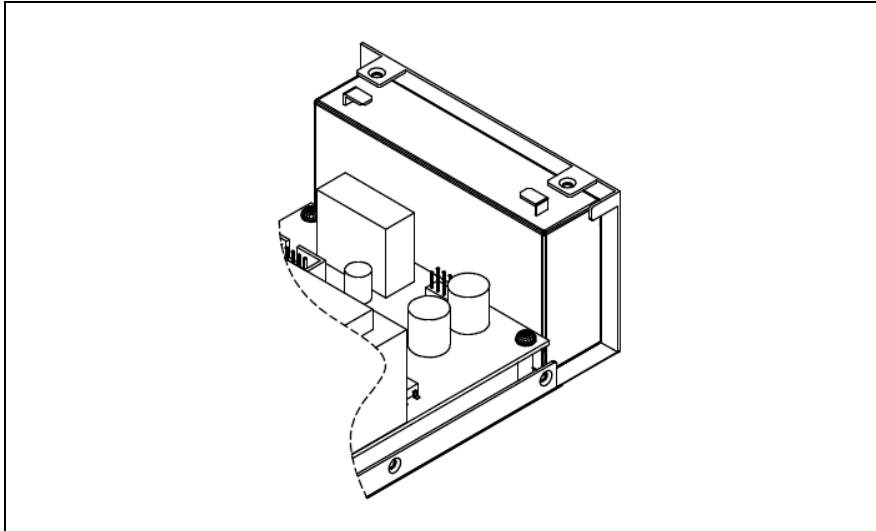


Figure 8 Internal Battery

- 4 Slide the battery out sideways.

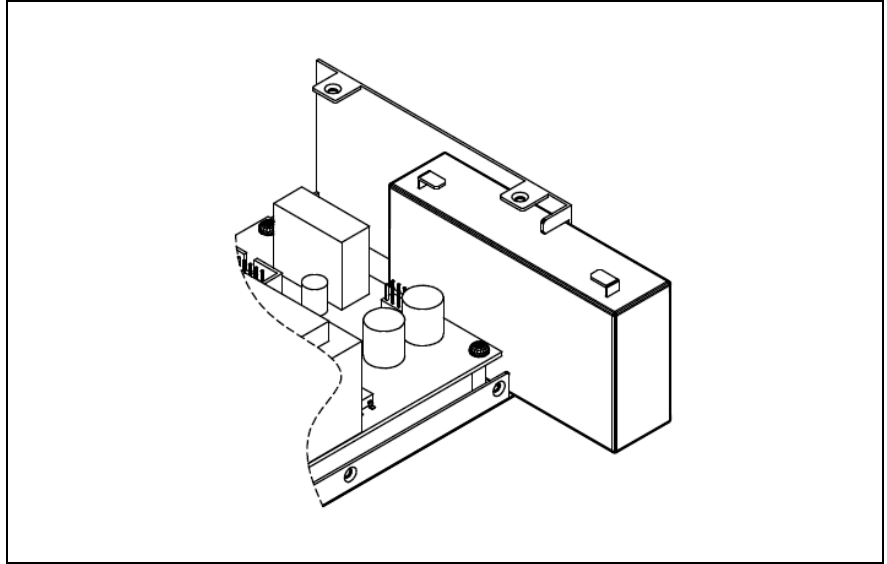


Figure 9 Battery removal

- 5 Insert a new battery maintaining the electrical terminals towards the front of the unit.

WARNING!



The new battery must be an Agilent Replacement Battery (see Orderable Parts Table).

In order to be compliant with warranty rules it is mandatory using Agilent battery.

- 6 Reconnect the electrical connections according to the polarity (red wire → “+”; black wire → “-“).
- 7 Replace the cover by tightening all the screws.
- 8 Reconnect the power cord to the unit.

Turbo-V Vent Device Orderable Parts

Table 3 Orderable Parts

DESCRIPTION	PART NUMBER
Gas filter	28-900008-01
Battery 6 V 1Ah	74-103100-01
Mains cable NEMA plug 3m long	969-9958
Mains cable European plug 3m long	969-9957

For a complete overview of Agilent's extensive vacuum product line, please refer to the Vacuum Catalogue.



Agilent Technologies

Vacuum Products Division

Dear Customer,

Thank you for purchasing an Agilent vacuum product. At Agilent Vacuum Products Division we make every effort to ensure that you will be satisfied with the product and/or service you have purchased.

As part of our Continuous Improvement effort, we ask that you report to us any problem you may have had with the purchase or operation of our products. On the back side you find a Corrective Action request form that you may fill out in the first part and return to us.

This form is intended to supplement normal lines of communications and to resolve problems that existing systems are not addressing in an adequate or timely manner.

Upon receipt of your Corrective Action Request we will determine the Root Cause of the problem and take the necessary actions to eliminate it. You will be contacted by one of our employees who will review the problem with you and update you, with the second part of the same form, on our actions.

Your business is very important to us. Please, take the time and let us know how we can improve.

Sincerely,

Giampaolo LEVI

***Vice President and General Manager
Agilent Vacuum Products Division***

Note: Fax or mail the Customer Request for Action (see backside page) to Agilent Vacuum Products Division (Torino) – Quality Assurance or to your nearest Agilent representative for onward transmission to the same address.

CUSTOMER REQUEST FOR CORRECTIVE / PREVENTIVE / IMPROVEMENT ACTION

TO: AGILENT VACUUM PRODUCTS DIVISION TORINO – QUALITY ASSURANCE

FAX N°: XXXX-011-9979350

ADDRESS: AGILENT TECHNOLOGIES ITALIA S.p.A. – Vacuum Products Division –

Via F.lli Varian, 54 – 10040 Leinì (TO) – Italy

E-MAIL: vpd-qualityassurance_pdl-ext@agilent.com

NAME _____	COMPANY _____	FUNCTION _____
ADDRESS: _____ _____		
TEL. N° : _____ FAX N° : _____		
E-MAIL: _____		
PROBLEM / SUGGESTION : _____ _____ _____ _____ _____		
REFERENCE INFORMATION (model n°, serial n°, ordering information, time to failure after installation, etc.): _____ _____ _____ _____		
		DATE _____
CORRECTIVE ACTION PLAN / ACTUATION (by AGILENT VPD) _____ _____ _____ _____ _____ _____		LOG N° _____

XXX = Code for dialing Italy from your country (es. 01139 from USA; 00139 from Japan, etc.)



Agilent Technologies



Vacuum Products Division Instructions for returning products

Dear Customer:

Please follow these instructions whenever one of our products needs to be returned.

- 1) Complete the attached Request for Return form and send it to Agilent Technologies (see below), taking particular care to identify all products that have pumped or been exposed to any toxic or hazardous materials.
- 2) After evaluating the information, Agilent Technologies will provide you with a Return Authorization (RA) number via email or fax, as requested.

Note: Depending on the type of return, a Purchase Order may be required at the time the Request for Return is submitted. We will quote any necessary services (evaluation, repair, special cleaning, eg).

3) Important steps for the shipment of returning product:

- Remove all accessories from the core product (e.g. inlet screens, vent valves).
- Prior to shipment, drain any oils or other liquids, purge or flush all gasses, and wipe off any excess residue.
- If ordering an Advance Exchange product, **please use the packaging from the Advance Exchange to return the defective product.**
- Seal the product in a plastic bag, and package product carefully to avoid damage in transit. You are responsible for loss or damage in transit.
- Agilent Technologies is not responsible for returning customer provided packaging or containers.
- **Clearly label package with RA number.** Using the shipping label provided will ensure the proper address and RA number are on the package. Packages shipped to Agilent without a RA clearly written on the outside cannot be accepted and will be returned.

- 4) Return only products for which the RA was issued.
- 5) **Product being returned under a RA must be received within 15 business days.**
- 6) **Ship to the location specified on the printable label, which will be sent, along with the RA number, as soon as we have received all of the required information.** Customer is responsible for freight charges on returning product.
- 7) Return shipments must comply with all applicable **Shipping Regulations** (IATA, DOT, etc.) and carrier requirements.

RETURN THE COMPLETED **REQUEST FOR RETURN** FORM TO YOUR NEAREST LOCATION:

EUROPE:

Fax: 00 39 011 9979 330
Fax Free: 00 800 345 345 00
Toll Free: 00 800 234 234 00
vpt-customer care@agilent.com

NORTH AMERICA:

Fax: 1 781 860 9252
Toll Free: 800 882 7426, Option 3
vpl-ra@agilent.com

PACIFIC RIM:

please visit our website for individual
office information
<http://www.agilent.com>



Vacuum Products Division Request for Return Form (Health and Safety Certification)

Please read important policy information on Page 3 that applies to all returns.

1) CUSTOMER INFORMATION

Company Name:		Contact Name:
Tel:	Email:	Fax:
Customer Ship To:		Customer Bill To:
Europe only: VAT reg. Number:		USA/Canada only: <input type="checkbox"/> Taxable <input type="checkbox"/> Non-taxable

2) PRODUCT IDENTIFICATION

Product Description	Agilent P/N	Agilent S/N	Original Purchasing Reference

3) TYPE OF RETURN (Choose one from each row and supply Purchase Order if requesting a billable service)

- 3A. ☐ Non-Billable ☐ Billable ➡ New PO # (hard copy must be submitted with this form):
- 3B. ☐ Exchange ☐ Repair ☐ Upgrade ☐ Consignment/Demo ☐ Calibration ☐ Evaluation ☐ Return for Credit

4) HEALTH and SAFETY CERTIFICATION

AGILENT TECHNOLOGIES CANNOT ACCEPT ANY PRODUCTS CONTAMINATED WITH BIOLOGICAL OR EXPLOSIVE HAZARDS, RADIOACTIVE MATERIAL, OR MERCURY AT ITS FACILITY.

Call Agilent Technologies to discuss alternatives if this requirement presents a problem.

The equipment listed above (check one):

- ☐ **HAS NOT** pumped or been exposed to any toxic or hazardous materials. OR
- ☐ **HAS** pumped or been exposed to the following toxic or hazardous materials. If this box is checked, the following information must also be filled out. Check boxes for all materials to which product(s) pumped or was exposed:

☐ Toxic ☐ Corrosive ☐ Reactive ☐ Flammable ☐ Explosive ☐ Biological ☐ Radioactive

List all toxic/hazardous materials. Include product name, chemical name, and chemical symbol or formula:

NOTE: If a product is received at Agilent which is contaminated with a toxic or hazardous material that was not disclosed, the customer will be held responsible for all costs incurred to ensure the safe handling of the product, and is liable for any harm or injury to Agilent employees as well as to any third party occurring as a result of exposure to toxic or hazardous materials present in the product.

Print Name: _____ **Authorized Signature:** _____ **Date:** _____

5) FAILURE INFORMATION:

Failure Mode (REQUIRED FIELD. See next page for suggestions of failure terms):
Detailed Description of Malfunction: (Please provide the error message)
Application (system and model):

I understand and agree to the terms of Section 6, Page 3/3.

Print Name: _____ **Authorized Signature:** _____ **Date:** _____



**Vacuum Products Division
Request for Return Form
(Health and Safety Certification)**

Please use these Failure Mode to describe the concern about the product on Page 2.

TURBO PUMPS and TURBO CONTROLLERS

APPARENT DEFECT/MALFUNCTION	POSITION	PARAMETERS
<ul style="list-style-type: none"> - Does not start - Does not spin freely - Does not reach full speed - Mechanical Contact - Cooling defective 	<ul style="list-style-type: none"> - Noise - Vibrations - Leak - Overtemperature - Clogging 	<ul style="list-style-type: none"> - Vertical - Horizontal - Upside-down - Other:
		Power: Rotational Speed: Current: Inlet Pressure: Temp 1: Foreline Pressure: Temp 2: Purge flow: OPERATING TIME:

ION PUMPS/CONTROLLERS

<ul style="list-style-type: none"> - Bad feedthrough - Vacuum leak - Error code on display 	<ul style="list-style-type: none"> - Poor vacuum - High voltage problem - Other
---	--

VALVES/COMPONENTS

<ul style="list-style-type: none"> - Main seal leak - Solenoid failure - Damaged sealing area 	<ul style="list-style-type: none"> - Bellows leak - Damaged flange - Other
--	---

LEAK DETECTORS

<ul style="list-style-type: none"> - Cannot calibrate - Vacuum system unstable - Failed to start 	<ul style="list-style-type: none"> - No zero/high background - Cannot reach test mode - Other
---	--

INSTRUMENTS

<ul style="list-style-type: none"> - Gauge tube not working - Communication failure - Error code on display 	<ul style="list-style-type: none"> - Display problem - Degas not working - Other
--	---

SCROLL AND ROTARY VANE PUMPS

<ul style="list-style-type: none"> - Pump doesn't start - Doesn't reach vacuum - Pump seized 	<ul style="list-style-type: none"> - Noisy pump (describe) - Over temperature - Other
---	--

DIFFUSION PUMPS

<ul style="list-style-type: none"> - Heater failure - Doesn't reach vacuum - Vacuum leak 	<ul style="list-style-type: none"> - Electrical problem - Cooling coil damage - Other
---	--

Section 6) **ADDITIONAL TERMS**

Please read the terms and conditions below as they apply to all returns and are in addition to the Agilent Technologies Vacuum Product Division – Products and Services Terms of Sale.

- Customer is responsible for the freight charges for the returning product. Return shipments must comply with all applicable **Shipping Regulations** (IATA, DOT, etc.) and carrier requirements.
- Customers receiving an Advance Exchange product agree to return the defective, rebuildable part to Agilent Technologies **within 15 business days**. Failure to do so, or returning a non-rebuildable part (crashed), will result in an invoice for the non-returned/non-rebuildable part.
- Returns for credit toward the purchase of new or refurbished Products are subject to prior Agilent approval and may incur a restocking fee. Please reference the original purchase order number.
- Units returned for evaluation will be evaluated, and a quote for repair will be issued. If you choose to have the unit repaired, the cost of the evaluation will be deducted from the final repair pricing. A Purchase Order for the final repair price should be issued within 3 weeks of quotation date. Units without a Purchase Order for repair will be returned to the customer, and the evaluation fee will be invoiced.
- A Special Cleaning fee will apply to all exposed products per Section 4 of this document.
- If requesting a calibration service, units must be functionally capable of being calibrated.

Sales and Service Offices

United States

**Agilent Technologies
Vacuum Products Division**
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Lexington, MA 02421 - USA Tel.: +1 781
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Benelux

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Herculesweg 8
4338 PL Middelburg
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Fax: +31 118 671569
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**Central coordination through:
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Vacuum Products Division**
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Fax: +33 (0) 1 69 86 29 88
Toll free: 00 800 234 234 00

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Blue Dart Centre,
Andheri (East), Mumbai – 400 099.India
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